

Claims

Having thus described the preferred embodiment, what is claimed is:

1. A canister vacuum cleaner comprising:
 - a body defining a suction inlet and an exhaust outlet;
 - a suction source contained in said body and located fluidically between said suction inlet and said exhaust outlet;
 - a dirt cup releasably connected to said body, said dirt cup defining a dirt separation chamber and an airstream outlet that releasably mates with said suction inlet when said dirt cup is connected to said body, said dirt separation chamber conformed to impart a rotational flow pattern to an airstream passing therethrough whereby contaminants entrained in said airstream are separated therefrom and deposited in said dirt cup; and,
 - a filter located in said dirt separation chamber of said dirt cup in covering relation with said airstream outlet.
2. The canister vacuum cleaner as set forth in claim 1, wherein a first portion of said dirt cup defines said airstream outlet and a second portion of said dirt cup defines an open entrance to said dirt separation chamber, said body comprising a cover that is selectively located in covering relation with said open entrance of said dirt cup when said dirt cup is connected to said body.
3. The canister vacuum cleaner as set forth in claim 2, wherein said cover is pivotably connected to a main portion of said body and pivots on an arc between a first position spaced away from said open entrance of said dirt cup and a second position in covering relation with said open entrance of said dirt cup.

4. The canister vacuum cleaner as set forth in claim 2, wherein said hose communicates with said dirt separation chamber of said dirt cup through said movable cover.

5. The canister vacuum cleaner as set forth in claim 4, further comprising a hose fitting connected to and extending through said cover, said hose fitting comprising an inlet conduit projecting outwardly away from said cover external to said body and an outlet conduit located adjacent said open entrance of said dirt cup when said dirt cup is connected to said housing and said cover is placed in covering relation with said open entrance of said dirt cup.

6. The canister vacuum cleaner as set forth in claim 5, wherein said outlet conduit of said hose fitting is directed obliquely toward an interior wall of said dirt cup when said cover is placed in covering relation with said open entrance of said dirt cup whereby an airstream entering said dirt separation chamber from said outlet conduit of said hose fitting is directed obliquely at said interior wall of said dirt cup.

7. The canister vacuum cleaner as set forth in claim 1, wherein said filter is releasably connected to said dirt cup.

8. The canister vacuum cleaner as set forth in claim 1, wherein an annular airflow space is defined between said filter and an interior wall of said dirt cup that defines said dirt separation chamber, and wherein said canister vacuum cleaner further comprises:

a plurality of wheels connected to said body and adapted to support said body movably on an associated support surface in an operative position wherein said filter is inclined relative to said associated support surface less than 20°.

9. The canister vacuum cleaner as set forth in claim 8, further comprising a plurality of wheels including at least one wheel connected to said dirt cup, said plurality of wheels movably supporting said body and dirt cup connected to said body on an associated support surface.

10. The canister vacuum cleaner as set forth in claim 9, wherein said filter extends axially in said dirt cup along a longitudinal axis that is parallel to the associated support surface when said body and dirt cup are movably supported on the associated support surface.

11. The canister vacuum cleaner as set forth in claim 8, wherein said dirt cup includes an end wall that defines said airstream outlet, said filter projecting outwardly from said end wall and unsupported by said dirt cup between said end wall and an outer end of said filter that is spaced from said end wall.

12. The canister vacuum cleaner as set forth in claim 10, further comprises an exhaust filter located in said body in covering relation with said exhaust outlet.

13. A bagless vacuum cleaner comprising:
a body;
a dirt cup releasably connected to and selectively separable from said body; and,
a plurality of wheels each connected to one of said body and said dirt cup for movably supporting said body and said dirt cup on an associated support surface when said dirt cup is connected to said body, said plurality of wheels comprising at least one wheel connected to said dirt cup.

14. The canister vacuum cleaner as set forth in claim 13, wherein said dirt cup comprises a handle and wherein said at least one wheel connected to said dirt cup is connected to said handle.

15. The canister vacuum cleaner as set forth in claim 14, wherein said at least one wheel connected to said dirt cup comprises a pivotable caster wheel assembly.

16. The canister vacuum cleaner as set forth in claim 14, wherein said dirt cup defines a pouring spout.

17. A bagless canister vacuum cleaner comprising:
a main housing defining a suction source inlet, an exhaust outlet and a receiver region adapted to receive a dirt cup;
a suction source located fluidically between said suction source inlet and said exhaust outlet;
a dirt cup releasably coupled to said receiver region of said main housing, said dirt cup comprising: (i) an interior wall defining a dirt separation chamber; (ii) an open first end in communication with said dirt separation chamber; and, (iii) a closed second end with an aperture forming an airstream outlet from said dirt separation chamber, said dirt cup releasably coupled to said main housing with said airstream outlet of said dirt cup mated with said suction source inlet of said main housing;
a filter assembly releasably connected to said dirt cup and located in said dirt separation chamber, said filter assembly comprising a filter element located in covering relation with said airstream outlet of said dirt cup and positioned so that an annular airflow space is defined between said filter element and said interior wall of said dirt cup; and,
a cover pivotably connected to said housing, said cover movable between an open position, where said cover is disengaged from said dirt cup, and a closed, operative position where said cover is placed in covering relation with

and blocks said open first end of said dirt cup, said cover, when located in said closed, operative position, preventing separation of said dirt cup from said main housing.

18. The bagless canister vacuum cleaner as set forth in claim 17, further comprising:

at least one wheel rotatably supported by said dirt cup external to said dirt separation chamber, said at least one wheel cooperating with said plurality of wheels connected to said main housing to movably support said main housing and said dirt cup on said associated support surface when said dirt cup is coupled to said receiver region of said main housing.

19. The bagless canister vacuum cleaner as set forth in claim 17, further comprising:

a hose fitting adapted for connection to an associated hose, said hose fitting connected to said cover and movable therewith and arranged in fluid communication with said dirt separation chamber when said cover is located in said closed, operative position;

a manually operable latch comprising a first portion and a second portion adapted to releasably mate with said first portion, wherein one of said first and second portions is connected to said cover and the other of said first and second portions is connected to one of said dirt cup and said main housing, said latch selectively retaining said cover in said closed, operative position.

20. The bagless canister vacuum cleaner as set forth in claim 17, wherein said first portion of said latch is connected to said cover and said second portion of said latch is connected to said dirt cup, said cover, when retained in said closed operative position relative to said dirt cup by said latch, preventing separation of said dirt cup from said housing.

21. The bagless canister vacuum cleaner as set forth in claim 20, wherein said dirt cup defines a projecting male portion that mates with a female portion of said main housing when said dirt cup is coupled to said receiver region of said main housing, and wherein said male and female portions are inseparable when said cover is located in its closed, operative position.

22. The bagless canister vacuum cleaner as set forth in claim 17, wherein said filter assembly is releasably connected to and projects outwardly from said end wall.

23. The bagless canister vacuum cleaner as set forth in claim 22, wherein said end wall defines a boss surrounding said airstream outlet and wherein said filter assembly includes a base plate that is releasably engaged with said boss by a friction fit.

24. The bagless canister vacuum cleaner as set forth in claim 22, wherein said filter assembly is defined about a longitudinal axis that lies parallel to said associated support surface when said main housing is movably and operatively supported on said associated support surface by said plurality of wheels.

25. The bagless canister vacuum cleaner as set forth in claim 17, further comprising:

a final filter located downstream from said suction source and upstream from said exhaust outlet to filter an exhaust airstream exhausted by said suction source prior to said exhaust airstream being exhausted from said exhaust outlet of said main housing.

26. The bagless canister vacuum cleaner as set forth in claim 25, wherein said final filter comprises a HEPA filter medium.

27. The bagless canister vacuum cleaner as set forth in claim 19, wherein said hose fitting comprises an inlet conduit projecting outwardly away from said cover and an inlet conduit projecting into said dirt separation chamber adjacent said open first end of said dirt cup, said inlet conduit directed obliquely toward said interior wall of said dirt cup defining said dirt separation chamber.

28. The bagless canister vacuum cleaner as set forth in claim 17, further comprising:

a handle assembly connected to said dirt cup; and,

a wheel assembly connected to said handle assembly and comprising a rotatable wheel that cooperates with said plurality of wheels connected to said main housing to movably support said main housing and said dirt cup releasably connected to said main housing above said associated support surface.

29. The bagless canister vacuum cleaner as set forth in claim 28, wherein said wheel assembly comprises a caster wheel assembly including said rotatable wheel.

30. A bagless canister vacuum cleaner comprising:

a main housing defining an airflow inlet, an airflow outlet and a receiver region adapted to receive a dirt cup;

a suction source located in said housing and operational to establish and maintain an airstream that flows from said airflow inlet to said airflow outlet;

a dirt cup releasably coupled to said receiver region of said main housing, said dirt cup comprising: (i) an interior wall defining a dirt separation chamber conformed to impart a rotational flow path to a dirty airstream passing therethrough whereby contaminants are separated from the dirty airstream and deposited in said dirt cup; (ii) an open first end in communication with said dirt separation chamber; and, (iii) an airstream outlet from said dirt separation chamber, said dirt cup releasably coupled to said main housing with said airstream outlet of said dirt cup mated with said airflow inlet of said main

housing;

a filter assembly releasably connected to said dirt cup and located in said dirt separation chamber, said filter assembly comprising a filter element located in covering relation with said airstream outlet of said dirt cup; and,

a cover connected to said housing, said cover movable between an open position, where said cover is disengaged from said dirt cup, and a closed, operative position where said cover is placed in covering relation with and blocks said open first end of said dirt cup, said cover, when located in said closed, operative position, preventing separation of said dirt cup from said main housing.

31. The bagless canister vacuum cleaner as set forth in claim 30, further comprising a handle connected to said cover to facilitate manual movement of said cover between said open and closed positions.

32. The bagless canister vacuum cleaner as set forth in claim 30, further comprising a hose and a hose fitting interconnecting said hose to said cover, said hose fitting comprising a first portion projecting outwardly away from said cover and a second portion projecting into said dirt separation chamber adjacent said open first end of said dirt cup, said second portion directed obliquely toward said interior wall of said dirt cup defining said dirt separation chamber.

33. The bagless canister vacuum cleaner as set forth in claim 30, further comprising:

a plurality of wheels for movably supporting said main housing and said dirt cup on a support surface when said dirt cup is coupled to said receiver region of said main housing, at least one of said plurality of wheels connected to said dirt cup.

34. The bagless canister vacuum cleaner as set forth in claim 33, wherein said dirt cup comprises a handle and wherein said at least one of said plurality of wheels connected to said dirt cup is connected to said handle.

35. A bagless vacuum cleaner comprising:

- a main housing defining a suction source inlet, an exhaust outlet and a receiver region adapted to receive a dirt cup;
- a suction source located fluidically between said suction source inlet and said exhaust outlet;
- a dirt cup releasably coupled to said receiver region of said main housing, said dirt cup comprising: (i) an interior wall defining a dirt separation chamber; (ii) an open first end in communication with said dirt separation chamber; and, (iii) an airstream outlet from said dirt separation chamber, said dirt cup releasably coupled to said main housing with said airstream outlet of said dirt cup mated with said suction source inlet of said main housing;
- a filter assembly releasably connected to said dirt cup and located in said dirt separation chamber, said filter assembly comprising a filter element located in covering relation with said airstream outlet of said dirt cup and positioned so that an annular airflow space is defined between said filter element and said interior wall of said dirt cup; and,
- a base connected to said main housing and conformed to support said main housing and said dirt cup releasably connected to said receiver region of said main housing on said support surface in a second, non-operative position with said open first end of said dirt cup located at a select elevation relative to said dirt separation chamber to prevent spillage of associated dirt and debris contents of said dirt separation chamber from said open first end of said dirt cup.

36. The bagless canister vacuum cleaner as set forth in claim 35, further comprising:

a plurality of wheels for supporting said main housing above the associated support surface, wherein said base is conformed to support said

main housing and said dirt cup releasably connected to said main housing in the second, non-operative position with at least one of the plurality of wheels out of contact with said associated support surface.

37. The bagless canister vacuum cleaner as set forth in claim 35, wherein said open first end of said dirt cup defines a spout that is conformed to facilitate pouring associated dirt and debris contents from said dirt separation chamber of said dirt cup and wherein said dirt cup further comprises a handle located generally opposite said spout.

38. A vacuum cleaner comprising:
a housing;
a dirt cup releasably connected to said housing, said dirt cup defining a dirt separation chamber;
a filter located in said dirt separation chamber of said dirt cup; and,
a suction source located in said housing and in fluid communication with said dirt separation chamber, said suction source, when selectively operated, establishing and maintaining a suction airstream that flows into and through said dirt separation chamber to an exhaust outlet defined by said housing, wherein said suction airstream, when moving through said dirt separation chamber, moves rotationally around a substantially horizontal axis of said filter before passing through said filter and exiting said dirt separation chamber.

39. A bagless vacuum cleaner comprising:
a body; and,
a dirt cup releasably connected to and selectively separable from said body, said dirt cup comprising a handle and a pour spout.

40. The bagless vacuum cleaner as set forth in claim 39, wherein said handle and pour spout are located opposite each other.

41. The bagless vacuum cleaner as set forth in claim 39, further comprising a second handle, said second handle connected to said body.

42. The bagless vacuum cleaner as set forth in claim 39, further comprising:

a lid connected to said body and adapted for selectively covering an open end of said dirt cup; and,

a handle connected to said lid.

43. The bagless vacuum cleaner as set forth in claim 39, further comprising:

a strap connected to said body, said strap adapted for securing said bagless vacuum cleaner to a body of a user.

44. The bagless vacuum cleaner as set forth in claim 39, further comprising:

at least one wheel connected to said body; and,

at least one wheel connected to said dirt cup.